

What is claimed is:

1. An isolated or recombinant nucleic acid or functional equivalent or functional fragment thereof encoding an apoptin-associating proteinaceous substance that induces apoptosis.
2. The nucleic acid according to claim 1 wherein said apoptin-associating proteinaceous substance co-localizes with apoptin.
3. The nucleic acid according to claim 1 or 2 wherein said apoptin-associating proteinaceous substance binds to the mouse transcription factor YY1.
4. The nucleic acid according to claim 1 or 2, wherein said nucleic acid is derived from a cDNA library.
5. The nucleic acid according to claim 4 wherein said cDNA library comprises human cDNA.
6. A nucleic acid according to claim 1 that hybridizes to a nucleic acid molecule encoding an apoptin-associating proteinaceous substance as shown in figure 1 or 2.
7. The nucleic acid according to claim 6 that is at least 70% homologous to a nucleic acid molecule encoding an apoptin-associating proteinaceous substance as shown in figure 1 or 2, or to a functional equivalent or functional fragment thereof.
8. A vector comprising a nucleic acid according to claim 1.
9. A vector according to claim 8 comprising a gene-delivery vehicle.

- RECEIVED  
U.S. PATENT AND TRADEMARK OFFICE
10. A host cell comprising a nucleic acid according to claim 1 or comprising a vector according to claim 8.
  11. The host cell according to claim 10 wherein said host cell is a yeast cell or a vertebrate cell.
  12. An isolated or recombinant apoptin-associating proteinaceous substance that induces apoptosis.
  13. The proteinaceous substance according to claim 12 wherein said proteinaceous substance co-localizes with apoptin.
  14. The proteinaceous substance according to claim 12 or 13 which binds to the mouse transcription factor YY1.
  15. An isolated or recombinant apoptin-associating proteinaceous substance that induces apoptosis, wherein said proteinaceous substance is encoded by a nucleic acid according to any one of claims 1, 6 or 7.
  16. A proteinaceous substance according to claim 12 comprising at least a part of an amino acid sequence as shown in figure 3 or a functional equivalent or functional fragment thereof.
  17. An isolated or synthetic antibody that specifically recognizes a proteinaceous substance or functional equivalent or functional fragment thereof according to claim 12.
  18. An isolated or recombinant apoptin-associating proteinaceous substance that induces apoptosis or a functional equivalent or part thereof that is specifically recognized by an antibody according to claim 17.

19. A method of inducing apoptosis, said method comprising:  
contacting a susceptible cell with a nucleic acid according to any one of  
claims 1, 6 or 7, or a proteinaceous substance according to any one of  
claims 12 or 16, wherein apoptosis in said susceptible cell is induced.
20. The method according to claim 19 wherein said apoptosis is  
p53-independent.
21. The method according to claim 19 further comprising contacting said  
susceptible cell with a nucleic acid encoding apoptin or a functional  
equivalent or fragment thereof or with an apoptin polypeptide or a  
functional equivalent or fragment thereof.
22. A composition comprising a nucleic acid according to any one of claims  
1, 6 or 7 or a proteinaceous substance according to any one of claims  
12 or 16.
23. The composition according to Claim 22, further comprising a nucleic  
acid encoding apoptin or a functional equivalent or fragment thereof or  
the polypeptide apoptin or a functional equivalent or fragment thereof.
24. The composition according to Claim 23, wherein said composition  
induces apoptosis.
25. The composition according to Claim 24, wherein said apoptosis is p53-  
independent.
26. A method for treating an individual in need thereof carrying a disease  
where enhanced cell proliferation or decreased cell death is observed,  
said method comprising;  
administering to said individual a composition according to claim 24 in  
an amount sufficient to treat symptoms of said disease.

27. A method for detecting the presence of cancer cells or cells that are cancer prone in a sample of cells, said method comprising:  
transfected cells in said sample with a nucleic acid according to any one of claims 1, 6 or 7, and  
determining the percentage of apoptosis of cells in said sample, wherein a decrease in apoptosis as compared to normal cells is indicative of the presence of cancer cells or cells that are cancer prone.
28. A method for detecting the presence of cancer cells or cells that are cancer prone in a sample of cells said method comprising:  
transfected said cells in said sample with a nucleic acid according to any one of claims 1, 6 or 7, and  
determining the intracellular localization of a proteinaceous substance derived from said nucleic acid in cells in said sample, wherein localization of said proteinaceous substance in the nucleus is indicative of the presence of cancer cells or cells that are cancer prone.
29. The method according to claim 28, wherein the presence of said proteinaceous substance in said cells is detected by immunostaining said cells with an antibody.
30. The method according to claim 29, wherein said antibody comprises an antibody that specifically recognizes an apoptin-associating proteinaceous substance or functional equivalent or functional fragment thereof.
31. A method for identifying a putative cancer-inducing agent, said method comprising:  
exposing a sample of cells to said agent,  
contacting said cells in said sample with a nucleic acid according to any one of claims 1, 6 or 7 or a proteinaceous substance according to one of

claims 12 or 16, and  
detecting the presence of cancer cells or cells that are cancer prone by  
determining the percentage of apoptosis of cells in said sample.

32. A method for identifying a putative cancer-inducing agent, said method comprising:  
exposing a sample of cells to said agent,  
contacting said cells in said sample with a nucleic acid according to any one of claims 1, 6 or 7 or a proteinaceous substance according to one of claims 12 or 16, and  
detecting the presence of cancer cells or cells that are cancer prone by determining the intracellular localization of said proteinaceous substance.
33. The method according to claim 31, wherein said putative cancer-inducing agent comprises a gene or functional fragment thereof.